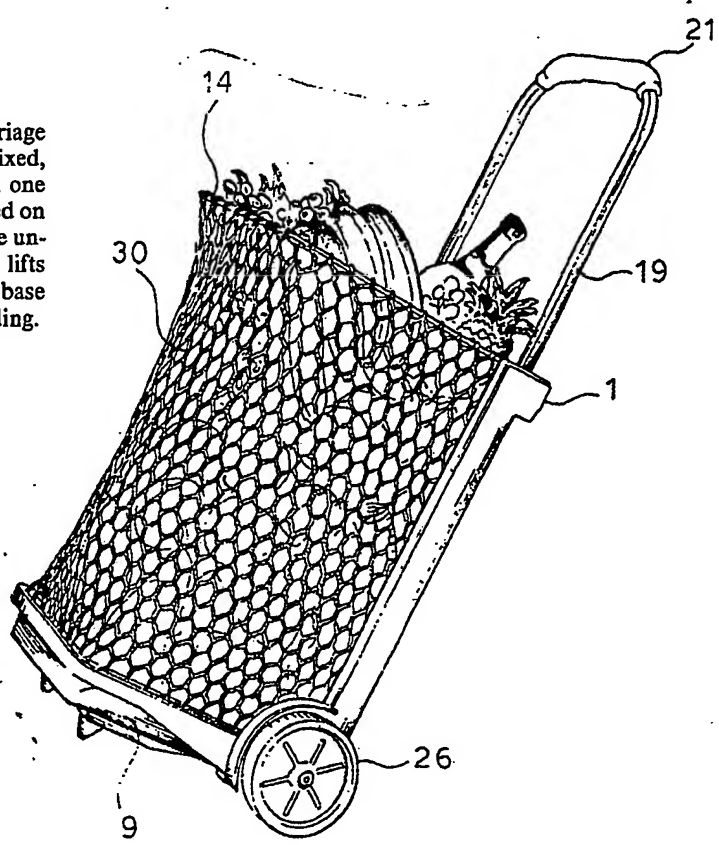




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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<p>(21) International Application Number: PCT/GR91/00002 (22) International Filing Date: 25 February 1991 (25.02.91) (71) Applicant (for all designated States except US): ELON LTD NEW PRODUCTS RESEARCH AND TRADING COMPANY[GR/GR]; 1 Partheniou Str., Nea Ionia, GR-142 33 Athens (GR). (72) Inventors; and (75) Inventors/Applicants (for US only) : NAKKAS, Argyris [GR/GR]; MASTROYANNIS, Spyros [GR/GR]; Elon Ltd., 1 Partheniou Str., Nea Ionia, GR-142 33 Athens (GR). (81) Designated States: AT (European patent), AU, BE (Euro- pean patent), BF (OAPI patent), BG, BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH (Eu- ropean patent), CM (OAPI patent), DE (European pa- tent), DK (European patent), ES (European patent); FI, FR (European patent), GA (OAPI patent), GB (Euro- pean patent), GR (European patent), HU, IT (European patent), JP, KR, LU (European patent), MC, ML (OAPI patent), MR (OAPI patent), NL (European patent), NO, PL, RO, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US.</p>		<p>Published <i>With international search report.</i></p>
<p>(54) Title: FOLDING SHOPPING CARRIAGE</p> <p>(57) Abstract</p> <p>The invention concerns a folding shopping carriage consisting of one main body (1) onto which are fixed, move and fold one base (9), one special frame (14), one net (30) and one handle (19). Two wheels (26) are fixed on and rotate, at the lower part of the main body (1). The unfolding is achieved by pulling the handle (19) which lifts the special frame (14), which pushes and opens the base (9) and makes the carriage ready for immediate loading.</p> 		

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Folding shopping carriage

The invention concerns a folding shopping carriage which consists of a main body specially designed, so that all the other parts of the carriage, base, special frame, net, and handle, are supported and move in it and fold
5 into it's hollow section. The dimensions of the main body are the final ones (except a small part of the wheels) of the whole carriage when closed. The carriage, when closed, can be carried by the user like a handbag. The carriage opens with a simple movement, by pulling the handle
10 upwards, and closes with two basic movements, by pushing down the handle and closing the base. More technical details, such as the method of operation of the parts of the carriage, are given below in the detailed description of each part.

15 To date, the technology of the construction of shopping carriages has no similar construction to present. Most constructions consist either of a metal frame on which a bag is added or of a wire basket. The non folding carriages are large and most of the time heavy and
20 present a problem in carrying them and storing them. Constructions with a folding frame with a shopping bag attached to it, require a combination of movements for opening and closing. Furthermore, all types of carriages with attached shopping bags have in addition the following
25 disadvantages: 1) difficulty in loading the shopping, as the bag at it's upper part is not stable and the opening has the tendency to close, and 2) when on sloping ground, the carriages overturn because of the one sided shifting of the load in the upper part of the bag, due to
30 lack of a steady holding frame.

This invention, as described further below, aims to and succeeds in eliminating the above disadvantages. The advantages that are offered by this invention basically are that the folding carriage is compact and light, is

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carried by the user like a handbag when closed, and it opens and locks immediately with a single movement creating a stable opening for easy loading of the shopping which is held well in place, with no danger of shifting on sloping ground which would result in overturning.

5 The whole construction of the carriage, including the system for instant opening and locking, is achieved at a small cost due to the simple and specialized setting and formation of the various parts.

10 One method of applying the invention is described herebelow, with references to figures that show one preferred application where:

FIG. 1 shows in perspective view the folding carriage opened and loaded.

15 FIG. 2 shows in perspective view the folding carriage closed and carried by the user.

FIG. 3 shows in perspective view the folding carriage with flexible textile fabric (18) attached in place of the net (30).

20 FIG. 4 shows in perspective view the inner hollow section of the main body (1), with the base (9) closed and the handle (19) and the special frame (14) lowered. In this figure the net (30) is not shown.

FIG. 5 shows in perspective view the male part (31) and the female part (35) of the joint, as well as the axle (24) which has notches (25) for the safety clips (28) which hold the spring (29) compressed when all parts are assembled in their final position.

25 FIG. 6 shows in perspective view the inner hollow section of the main body (1) with the handle (19) pulled upwards completely and fixed on the projecting tooth (5). The handle (19) supports the special frame (14) at a right angle to the main body (1). On the base (9) part of the net (30) is shown attached to the wire (38) which clicks into the sockets (11).

35 FIG. 7 shows in perspective view the special plug (22)

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fixed with the safety spigot (23) at the end of the leg of the handle (19).

FIG. 8 shows in perspective view the inner hollow section of the main body (1). On the right side of the main body (1) the wire (39) is shown clicked in the sockets (7) and it is used to support the vertical side of the net (30).

FIG. 9 shows in perspective view the base (9) which has a rectangular projection (13) which is used for the support of the male part (31) of the joint, as well as it shows the projection with the hole (10).

FIG. 10 shows in elevation the socket (3) into which the special frame (14) clicks. In the same manner the wires (38) and (39) are clicked in the sockets (7) and (11) of the main body (1) and the base (9) respectively.

FIG. 11 shows in side view the movement of the special frame (14) and of the base (9).

The figures show a folding shopping carriage which consists of a main body (1) that has on each side at the lower part holes (6) into which fit respectively projections with holes (10) of the base (9) which at this stage stands at a right angle to the main body (1) because the two ends of the base (9) are in contact with and stopped by the lower horizontal part of the main body (1) and moves freely in a circle on the main body (1). The base (9) stops and locks at a right angle in respect to the main body (1) with a special joint consisting of two main parts, the male part (31) and the female part (35) left and right. The male part (31) has a rectangular reception (33) into which a respective rectangular projection (13) of the base (9) fits firmly, thus achieving the simultaneous rotation of both the base (9) and the male part (31). The male part (31) has a hole (32) at its center which coincides with the hole (10) of the base (9) and has teeth (34) around the hole (32) which interlock with respective teeth sockets (37) of the female part (35) of the joint, which are also around the hole (36) of the

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female part (35). The female part (35) does not rotate due to its shape that coincides with the shape of the lower horizontal part of the main body (1). Through the holes (10), (32) and (36) of the base (9), the male part (31) and the female part (35) respectively, an axle (24) passes, which has at proper locations six notches (25) which receive respective safety clips (28). The safety clip (28) holds the compression spring (29) compressed, which resists the disjoining of the parts (31) and (35) of the joint, thus achieving a satisfactorily stable support of the base (9), which will not close accidentally or due to load. A washer (27) is placed between the compression spring (29) and the safety clip (28). To prevent the axle (24) shifting sideways, a washer (27) and a safety clip (28) is placed at the outer sides of the main body (1) into a respective notch (25) of the axle (24). At each end of the axle (24) a wheel (26) is placed and is partly surrounded by a mud-guard (8) of the main body (1). This wheel is secured in place by the safety clip (28), which fits into the respective end notch (25) of the axle (24). Washers (27) are placed between the safety clips (28) and the wheel (26) to prevent the safety clips (28) coming out of the notches (25) while the wheel (26) is in motion. The main body (1) has on its upper, inner part, on either side of the handle (2) ribs with sockets (3) into which the straight end parts of the special frame (14), click into place, allowing the special frame (14) to be supported and rotate on the main body (1). During the pulling of the handle (19) there is a tendency for the sides of the special frame (14) to open and therefore to create friction on the inner sides of the main body (1). For this reason a plug (16) is fixed steadily on each end of the special frame (14) the sideways movement of which is stopped by the rib with the socket (3) of the main body (1). The special frame (14) supports the upper side of a flexible synthetic net (30) of which the lower side is fixed onto the base (9) by the wire (38) whose shape

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coincides with the perimetrical shape of the base (9), and which clicks into the sockets (11) of the base (9). The two vertical sides of the net (30) are supported by the wire (39) which clicks into the respective sockets (7) that exist on the inner vertical sides of the main body (1). The main body (1) has on its upper part and on the inside of its two sides, sockets (4) into which enter and slide the legs of the metal handle (19) on the ends of which special plugs (22) are attached with a safety spigot (23) or other means of securing them in place. The handle (19) has on its upper part a plastic or elastic cover (21). When the handle (19) is lowered, its upper part coincides with the shape of the handle (2) and therefore it does not block its opening. The handle (19), the special frame (14) and the base (9) although are not connected to each other in any way, they are assembled and formed in such a manner as to achieve simultaneous and interrelated unfolding when the handle (19) is pulled upward, making the carriage ready for loading. The opening and closing phases of the folding carriage work as follows: When the carriage is closed the handle (19) is completely inserted inside the main body (1). The curves (20) of the handle (19) allow enough space for the special frame (14) to be located vertically closed inside the main body (1). At this phase the packing rings (17) which are fixed on the leg of the angle (15) of the special frame (14) are located above the curves (20) of the handle (19). The base (9) is vertically closed with the teeth (34) of the male part (31) disjoined from the teeth sockets (37) of the female part (35). By pulling the handle (19) upwards, the curves (20) press the packing rings (17) and consequently the angles (15) which, working as levers, force the special frame (14) to rise immediately and at the same time to open the base (9). As the handle (19) reaches the uppermost position, the special plugs (22) of its ends, prevent it from coming out of its sockets (4) of the main body (1), and at the same time, they

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interlock with the teeth (5) of the main body (1). The handle (19) when at its uppermost position holds the special frame (14) at a right angle to the main body (1). The vertical legs of the handle (19) are not exactly parallel to each other. The distance between its ends is slightly larger in order to achieve the immediate interlocking of the special plugs (22) with the teeth (5) of the main body (1) because in this case the legs of the handle (19) work like a spring. The sockets (4) of the main body (1) have respective tolerances in order to allow the legs of the handle (19) to move enough so that the special plugs (22) lock into or unlock from the teeth (5) of the main body (1). The closing of the folding carriage is achieved as follows: The user presses the legs of the handle (19) simultaneously inwards and downwards so that the special plugs (22) unlock from the teeth (5) of the main body (1). Then, he lowers the handle (19) until it stops, and its curves (20) allow enough space for the angles (15) of the special frame (14) to fall down. Finally, he closes the base (9).

The packing rings (17) must be made from plastic or elastic material to contribute to the reduction of the friction between the metal handle (19) (which can be made of aluminium pipe) and the metal special frame (14).

The teeth (5) of the main body (1) may be sloped to 45° instead of a right angle. In this case the interlocking of the special plugs (22) of the handle (19) is less strong, and the handle (19) can be lowered with a simple push downwards.

Instead of the net (30) a respective flexible synthetic textile fabric (18) may be used, which can be fixed in place in the same way and using the same parts as for the net (30).

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To avoid damage, metal studs can be added to the studs (12) of the base (9).

For the mass production of the above parts, it is necessary to construct moulds and forms. The main body (1) and the base (9) can be made of plastic material such as polypropylene copolymer. The parts of the joint (31) and (35), the plugs (16) and the special plugs (22) can be made of plastic material such as nylon 6.

The above main parts are assembled together as shown indicatively and descriptively in the attached figures, according to their one basic construction and operation.

Possibilities of detail modifications are not considered in this description and figures. For each construction requirement, the shape of the parts or the mechanisms of operation may be modified without altering the basic principle of the invention which regards the construction of a folding shopping carriage, consisting of the aforementioned main parts, which although not immediately connected to each other with any means of connection, by pulling a handle (19), they simultaneously and immediately unfold and lock into place.

List of reference signs

1. Main body
2. Handle (steady)
3. Socket (for fixing the special frame)
4. Socket (of the moving handle)
- 5 5. Tooth (for stopping the moving handle)
6. Hole (for fixing the base)
7. Socket (for fixing the wire of the net)
8. Mud-guard
9. Base
- 10 10. Hole (for fixing the axle)
11. Socket (for fixing the wire of the net)
12. Stud
13. Rectangular projection
14. Special frame
- 15 15. Angle (of the special frame)
16. Plug (of the special frame)
17. Packing ring
18. Textile fabric
19. Handle (moving, metallic)
- 20 20. Curve (of the moving handle)
21. Plastic or elastic cover
22. Special plug (of the moving handle)
23. Safety spigot
24. Axle
- 25 25. Notch (for fixing the safety clip)
26. Wheel
27. Washer
28. Safety clip
29. Compression spring
- 30 30. Net
31. Male part (of the joint)
32. Hole (of the male part of the joint)
33. Rectangular reception (of the male part of the joint)
34. Tooth (of the male part of the joint)

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- 35. Female part (of the joint)
- 36. Hole (of the female part of the joint)
- 37. Tooth socket (of the female part of the joint)
- 38. Wire (for the fixing of the net)
- 5 39. Wire (for the fixing of the net)

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Claims

1. A folding shopping carriage characterized in that it consists of a main body (1) which has on each side of its lower part holes (6) in which fit projections with holes (10) of the base (9) which when opened forms a right angle with the main body (1). The base (9) is adequately stabilized with a left and a right joint consisting of a male part (31) which is fixed on the base (9) and rotates together with it, and a female part (35) which is fixed on and moves to and fro on an axle (24), at the ends of which two wheels (26) are fixed. The parts (31) and (35) of the joint interlock between themselves with teeth (34) and teeth sockets (37) with the help of a compression spring (29) which is fixed compressed on the axle (24) and resists the unlocking of the parts of the joint. The main body (1) supports a special frame (14) which moves in a circle, and has plugs (16), and of which the two end straight arms click into sockets (3) of the main body (1). A flexible net (30) or similar textile fabric (18) is fixed on the special frame (14), the base (9) and the main body (1), with the wires (38) and (39), which interlace with the sides of the net (30) or the textile fabric (18) and click into sockets (7) and (11) of the main body (1) and the base (9) respectively. The main body (1) has at the upper part and inside its two sides, sockets (4) in which enter and move the legs of a handle (19) which have at their ends special plugs (22) fixed with a safety spigot (23). The handle (19), the special frame (14) and the base (9) are not connected between them, but are in such a way located and formed, so that simultaneous movement and opening is achieved by pulling the handle (19) of which the curves (20) push the packing rings (17) and consequently the angles (15) of the special frame (14), which moves upwards pushing out the base (9). The handle (19) reaches the end position and stops by the interlocking of the special plugs (22) into teeth (5) of the

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main body (1).

2. One main body (1) of a folding shopping carriage in accordance with claim 1 characterized in that it is a one-piece body, that has at the center of its upper part a handle (2) for hanging, ribs with sockets (3) on each side of the handle (2) in which a special frame (14) clicks in and moves, it also has on each side of its lower part holes (6) in which a base (9) is fixed and moves, and also has mud-guards (8) for the wheels (26). Along the inner sides it has sockets (7) in which wires (39) are fixed by clicking, which support the side of a net (30) or textile fabric (18). In the upper part and on each side it has sockets (4) for the handle (19) as well as teeth (5) under the sockets (4), which support the special plugs (22) of the handle (19). Base (9), special frame (14), handle (19) and net (30) or textile fabric (18), fold inside the hollow section of the main body (1).

3. Folding shopping basket of a carriage in accordance with claim 1, characterized in that it consists of one main body (1), one base (9) which is fixed and rotates on the lower part of the main body (1), one special frame (14) which is fixed on and also rotates on the upper part of the main body (1) and one net (30) or textile fabric (18) which is part of and complements the shopping basket and is fixed with wires (38) and (39) which interlace with the sides of the net (30) or the textile fabric (18) and are supported by clicking into sockets (7) and (11) of the main body (1) and the base (9) respectively. The base (9), the special frame (14) and the net (30) or textile fabric (18) fold into the inner hollow section of the main body (1).

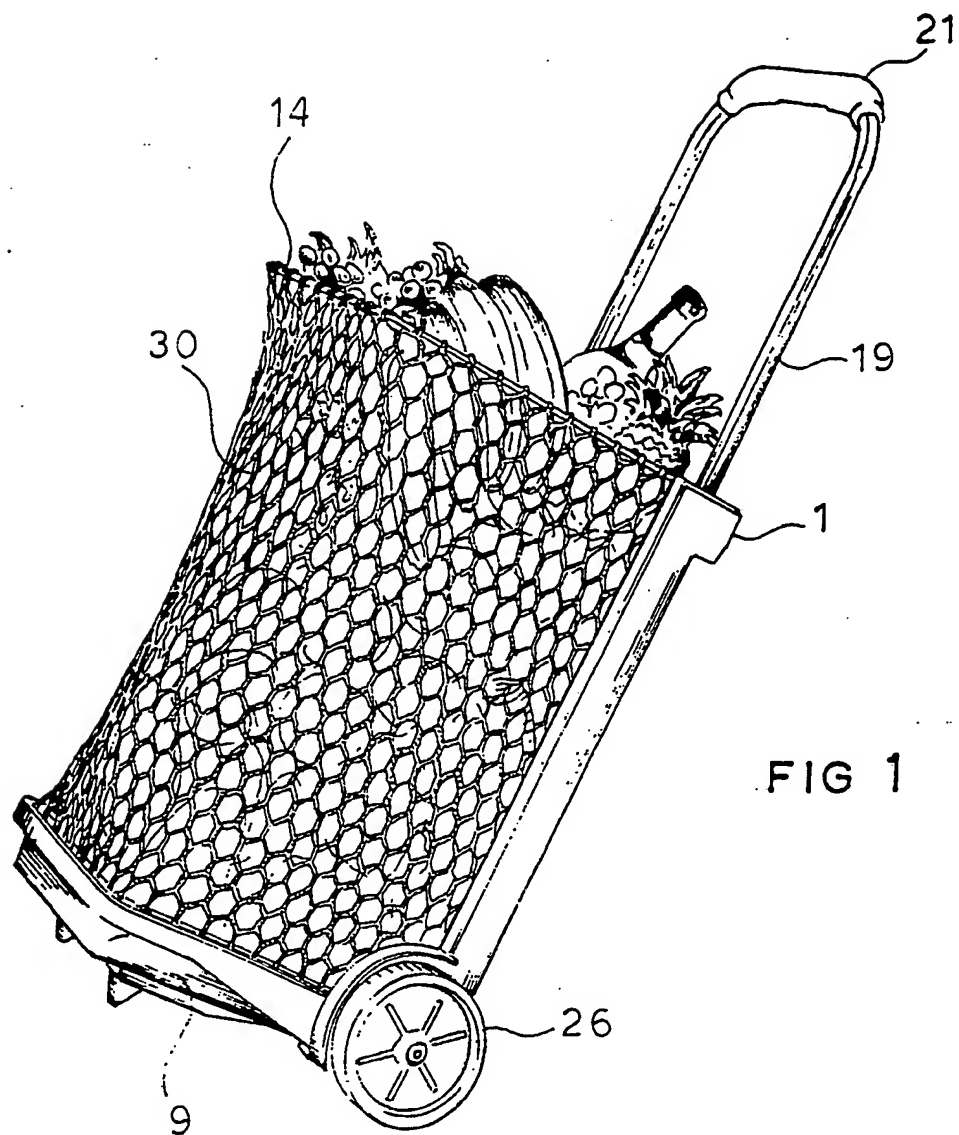
4. An unfolding system of a folding shopping carriage in accordance with claim 1, characterized in that it consists of a special frame (14) which is fixed on the upper

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part into sockets (3) of a main body (1) so shaped that angles (15) are formed at its two sides, which work as levers activated by the curves (20) of one handle (19) which is moved in and out of sockets (4) of the main body (1) and which when pulled out forces the special frame (14) to rise and hold it in a right angle position with the main body (1) while simultaneously the special frame (14) pushes out the base (9) which is fixed and moves on the lower part of the main body (1).

5 10 5. One joint of connection of one main body (1) with one base (9) of a folding shopping carriage in accordance with claim 1, characterized in that it consists of two main parts, one male part (31) and one female part (35). The male part (31) has a rectangular reception (33) in which a respective rectangular projection (13) of the base (9), fits. It also has at its center a hole (32) which coincides with the hole (10) of the base (9) and around the hole (32) has two teeth (34) which interlock with respective teeth sockets (37) of the female part 15 20 (35), which are around the hole (36) of the female part (35). The two parts (31) and (35) of the joint interlock between them with a compression spring (29) which is fixed on an axle (24) with safety clip (28) which fits in a notch (25) of the axle (24). The female part (35) does not 25 rotate and can move to and fro on the axle (24) during the phase of unlocking of the teeth (34) and the teeth sockets (37). The safety clip (28) hold the compression spring compressed, which resists the unlocking of parts (31) and (35) of the joint, and therefore prevents accidental or 30 due to load closing of the base (9), which when closed the teeth (34) are unlocked with the teeth sockets (37), but the static friction of the two parts hold the base (9) closed, which due to the reduced resistance of the joint can be pushed and opened by the special frame (14) during 35 the phase of opening.

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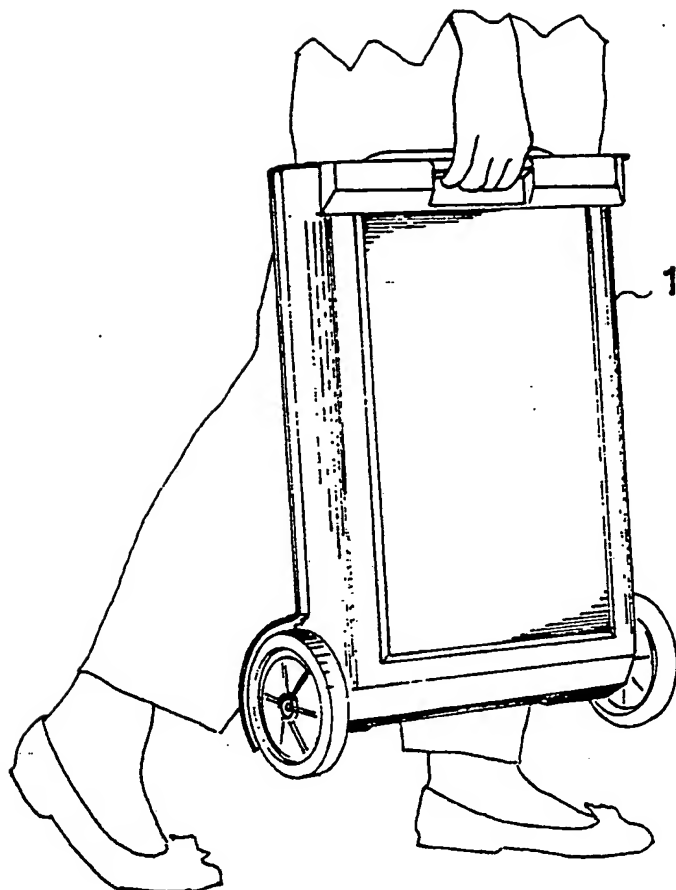
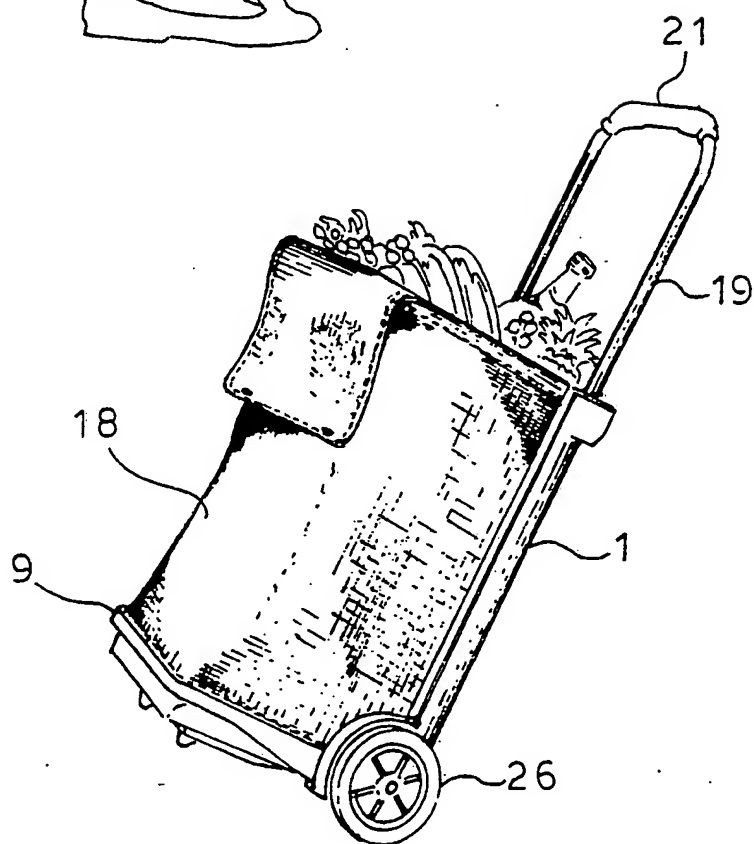


FIG 2

FIG 3



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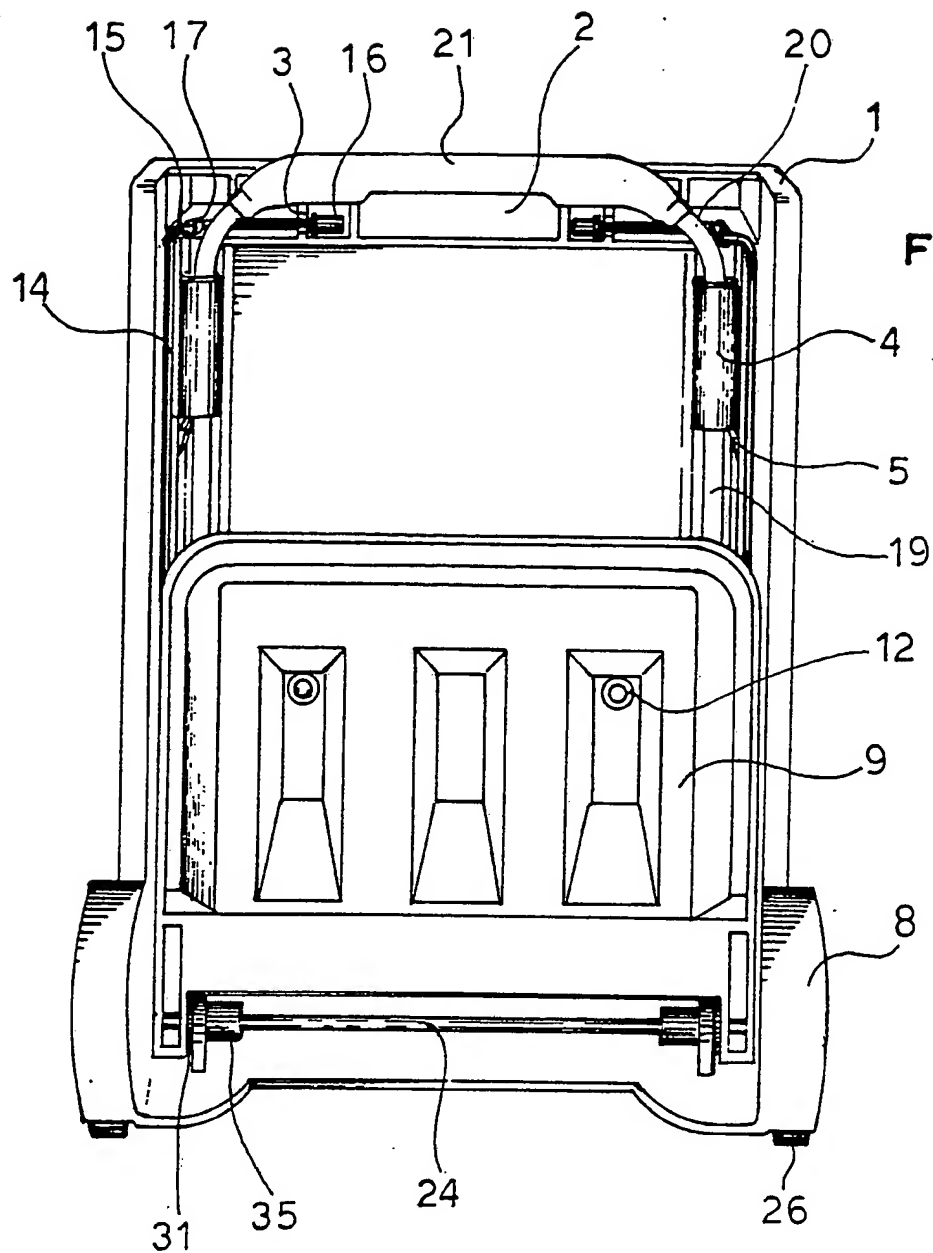


FIG 4

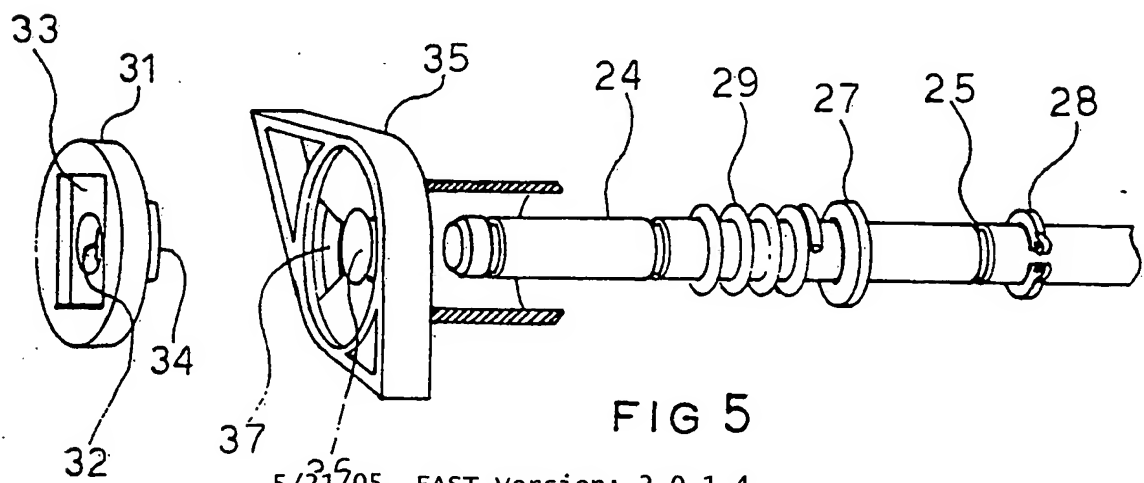


FIG 5

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FIG 8

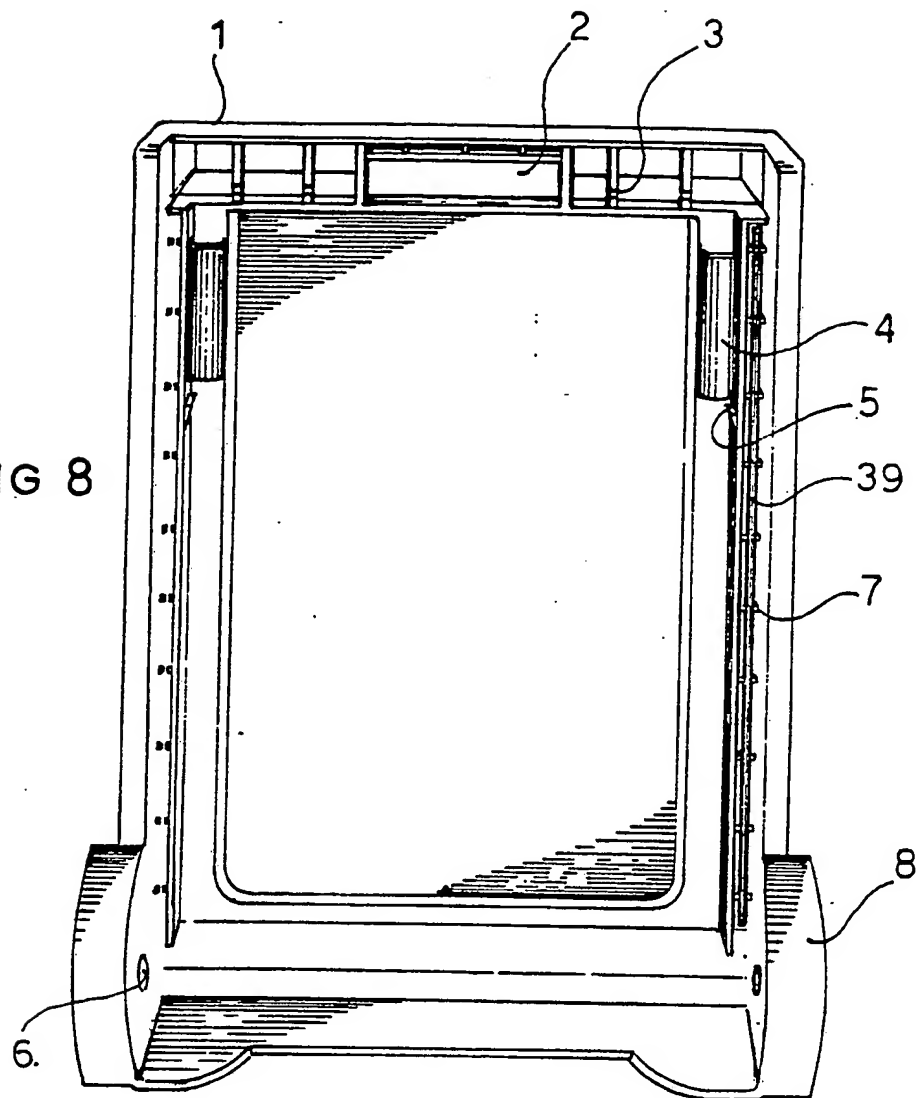


FIG 10

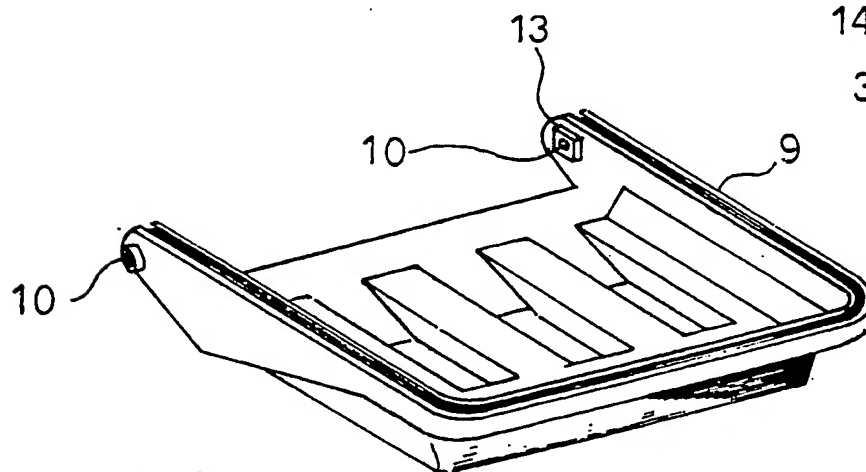
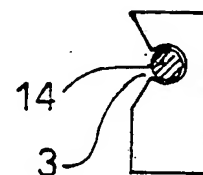
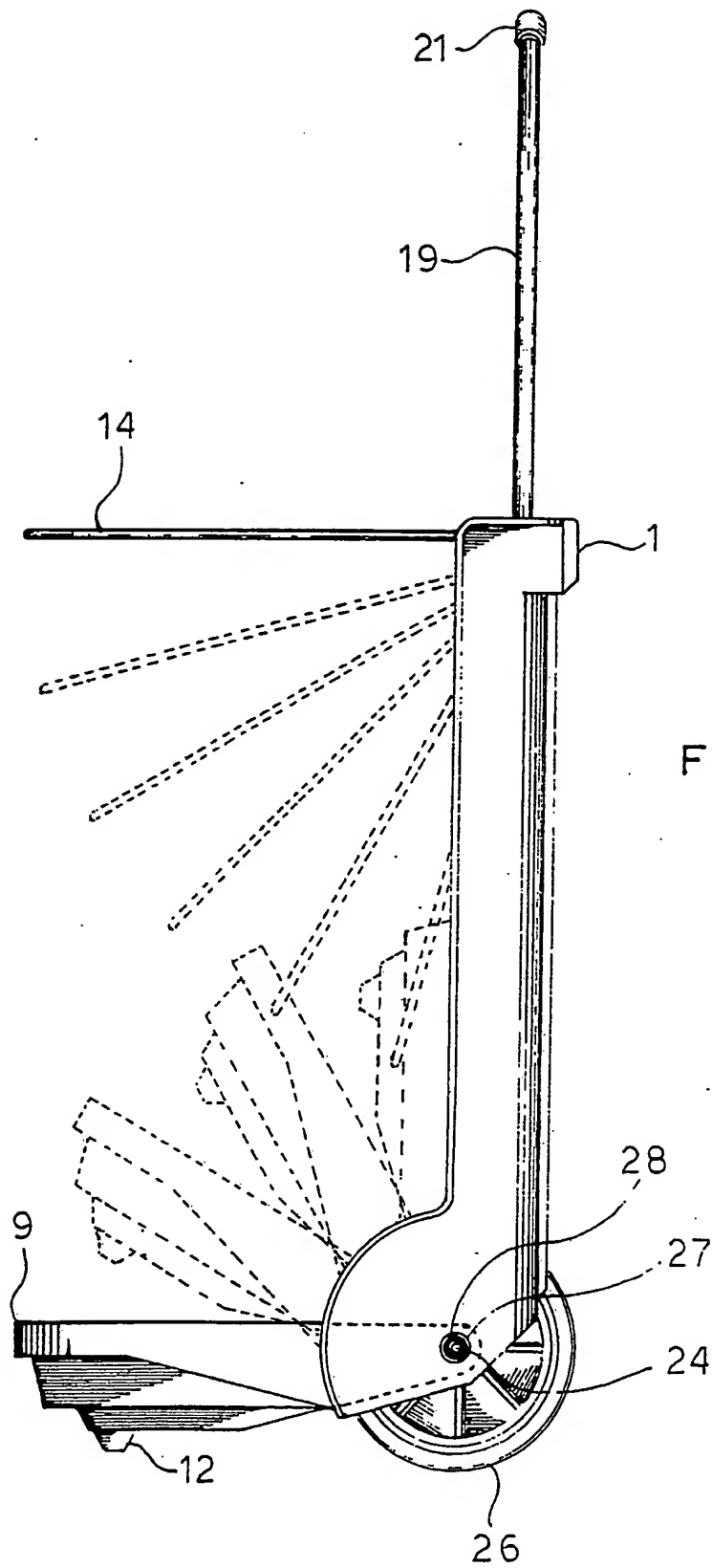


FIG 9

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INTERNATIONAL SEARCH REPORT

PCT/GR 91/00002

International Application No

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)⁶

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5

B62B1/12

II. FIELDS SEARCHEDMinimum Documentation Searched⁷

Classification System

Classification Symbols

Int.Cl. 5

B62B

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched⁸**III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹**

Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	US,A,2 701 142 (H.MOLENAAR) February 1, 1955 see the whole document ---	1,3
A	EP,A,125 337 (LEIFHEIT AG) November 21, 1984 see the whole document ---	1-3
A	US,A,3 858 899 (H.BONTRAGER) January 7, 1975 see the whole document ---	1

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IV. CERTIFICATION

Date of the Actual Completion of the International Search

21 OCTOBER 1991

Date of Mailing of this International Search Report

28.10.91

International Searching Authority

EUROPEAN PATENT OFFICE

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CZAJKOWSKI A.R.

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A-2701142		None	
EP-A-125337	21-11-84	None	
US-A-3858899	07-01-75	None	

EPO FORM P0079

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82.